

REMARKS

Claims 1, 2, 4, 5, 7-13, 15, 16, 18-23, 25, 26, 28-34, 36, 37 and 39-82 are pending, of which claims 12, 13, 15, 16, 18-23, 25, 26, 28-34, 36, 37 and 39-82 are withdrawn. Of these, Applicant notes that only claims 12, 13, 15, 16, 18-23, 33, 34, 36, 37, 39-42, 48-51 and 56-82 are listed as withdrawn in the Office Action, and requests clarification of the status of the claims. Of examined claims 1, 2, 4, 5, and 7-11, claim 1 is independent. By virtue of this response, independent claim 1 is amended. Claims 3, 14, 17, 24, 27, 35 and 38 are canceled, or were previously canceled. No new matter has been added.

Claims 1-2, 4-5 and 7-11 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,235,563 to Oka et al. (Oka). Regarding this rejection, Applicant respectfully submits that Oka does not disclose or properly suggest all of the features of independent claim 1.

Independent claim 1 recites (with emphasis added):

A method of manufacturing a semiconductor device comprising the steps of:

forming a crystalline semiconductor film on an insulating surface;

forming an insulating film on said crystalline semiconductor film;

introducing a dopant impurity into said crystalline semiconductor film through said insulating film by an ion doping;

annealing said crystalline semiconductor film;

forming a gate electrode over said insulating film, and

forming a channel region in the doped region of the crystalline semiconductor film,

wherein a peak of a concentration profile of said dopant impurity is located in said insulating film.

In rejecting claim 1, the Office Action asserts at pages 2-3 that Oka discloses all of the limitations of claim 1, with reference primarily to columns 17 and 18 of Oka, as well as to FIGS. 5A-5E of that reference. Specifically, the Office Action analogizes the claimed "crystalline semiconductor film" to film 502 of Oka, and the claimed "insulating film" to film 503 of Oka.

The Office Action further states that "... Oka teaches that the silicon oxide layer is formed over the crystalline substrate prior to and during ion implantation ... Since Applicant's specification teaches that doing so produces peak concentration within the SiO_x layer, it is inferred that Oka's same steps create the same results." Applicant respectfully disagrees with this analysis and the resulting conclusion.

Specifically, Applicant notes that this response assumes that the use of the term "infer(ence)" is, in the context of the present rejection based on 35 U.S.C. 102, a holding of inherency of the referenced property within Oka. That is, the Office Action appears to take the position that the relevant claim limitations, discussed in more detail below, inherently occur, or must occur, within Oka. In the event that this assumption is disputed, and the position is taken that the relevant claim limitations may occur in Oka, then Applicant alternatively submits that the rejection under 35 U.S.C. 102 is improper, and that a proper rejection of claim 1 based on Oka would have to be made under 35 U.S.C. 103, in order to show that a practitioner of Oka at the time of the invention would have been motivated to practice the invention of Oka according to Applicant's claim 1.

Proceeding on the assumption of alleged inherency, then, Applicant first notes that, as referenced above, the "... fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency (thereof) ... the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art" (MPEP 2112, emphasis in original).

Here, the only "basis in fact and/or technical reasoning" applied is the above-quoted assertion that "Applicant's specification teaches that" forming a silicon oxide layer over a crystalline substrate prior to and during ion implantation results in the claim limitation of "... a peak of a concentration profile of said dopant impurity is located in said insulating film," as recited in claim 1.

In fact, Applicant submits that this statement is a clear mischaracterization of Applicant's disclosure. Specifically, Applicant's disclosure clearly teaches, among other things, that

controlling a thickness of an over-lying insulating film may be used to control a concentration profile of an underlying semiconductor film, in the context of claim 1.

Therefore, the mere fact of forming a silicon oxide (insulating) layer over a semiconductor film prior to ion implantation, which, at best, is what is shown by Oka, is not sufficient to establish Applicant's claim limitation of "a peak of a concentration profile of said dopant impurity (being) located in said insulating film."

For example, Applicant's disclosure at, for example, page 16, lines 13-23, and with reference to FIG. 5, teaches that different thicknesses of an overlying insulating film result in different concentration profiles of a dopant implanted into a silicon film that is under the insulating film. Thus, the profile labeled "A" has a peak that is closer to the underlying silicon film than the profile labeled "B," because of the respective thicknesses of the silicon oxide film. As a result, for example, it is apparent that further reducing the thickness of the silicon oxide film would or could result in a corresponding peak of a concentration profile occurring within the silicon film itself.

In short, then, Applicant submits that the Office Action has not established either that Oka performs the "same steps" disclosed or claimed in the present application, or that Oka "create(s) the same results." For example, the Office Action has not established that a peak of a concentration profile of an ion-implanted dopant occurs within the silicon oxide layer 503 of Oka.

In particular, the Office Action has not established that a thickness of the silicon oxide layer 503 of Oka, especially when considered relative to other ion implantation parameters, would have resulted in the claim limitation of "a peak of a concentration profile of said dopant impurity (being) located in said insulating film." For example, Applicant notes that other factors may influence a location of a peak concentration. As one such example, Applicant notes that a location of peak concentration may be varied with respect to an acceleration voltage used during the implantation process. In other words, even if Oka were shown to use the same or similar thicknesses as the described implementations of Applicant's invention, still such a showing would be insufficient for disclosure of the above limitation of claim 1, since a dopant

Applicant : Shunpei Yamazaki, et al.
Serial No. : 09/451,665
Filed : November 30, 1999
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Attorney's Docket No.: 07977-017002 / US2968C1D1

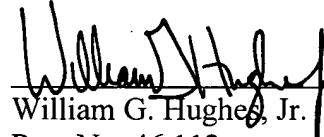
concentration profile would be dependent on a selected acceleration voltage (among other parameters).

Accordingly, Applicant respectfully submits that Oka does not disclose or properly suggest all of the limitations of claim 1, so that claim 1, along with its dependent claims 2, 4, 5, and 7-11, is believed to be allowable for at least the above reasons. Therefore, Applicant respectfully requests allowance of the present application in the Examiner's next official communication.

Please apply any charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: February 15, 2005



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